

What is claimed is:

- 1 1. A digital broadcast receiving apparatus that receives  
2 a transport stream onto which video data and/or audio data are  
3 multiplexed and outputs video data and/or audio data, comprising:  
4 a first extracting unit that has a packet filter and a  
5 section filter and is operable to extract one or more of tables,  
6 each of which (i) is repeatedly multiplexed onto the transport  
7 stream, (ii) is contained in a transport stream packet in a section  
8 format, (iii) is identified with a packet identifier and a table  
9 identifier, and (iv) includes information for extracting and  
10 outputting the video data and/or the audio data;  
11 a storing unit operable to store therein the extracted  
12 tables;  
13 a second extracting unit operable to extract an  
14 information table that is repeatedly multiplexed onto the  
15 transport stream and includes (i) a piece of table ID information  
16 and a table version number of each of the tables and (ii) an  
17 information table version number of the information table, which  
18 is to be updated when there is a change in any one of the pieces  
19 of table ID information and the table version numbers, the  
20 extraction being performed when the information table version  
21 number has been updated; and  
22 a controlling unit operable to analyze the extracted

23 information table, have the first extracting unit extract, based  
24 on table ID information, such a table whose table version number  
25 has been updated, and have the storing unit update what is stored  
26 therein, wherein

27 the controlling unit includes:

28 an information list generating subunit operable  
29 to generate an information list that includes such information  
30 of the tables stored in the storing unit that corresponds to  
31 the information table;

32 a comparing subunit operable to compare table  
33 version numbers written in the information list with the table  
34 version numbers in the information table extracted by the second  
35 extracting unit; and

36 a filter condition setting subunit operable to  
37 set a packet identifier and a table identifier of such a table  
38 whose table version number written in the information table is  
39 found updated by the comparing subunit, as a packet filter and  
40 a section filter, respectively.

1 2. The digital broadcast receiving apparatus of Claim 1,  
2 wherein

3 the pieces of table ID information written in the  
4 information table are the packet identifiers and the table  
5 identifiers of the tables.

1 3. The digital broadcast receiving apparatus of Claim 1,  
2 wherein

3 extraction conditions at the packet filter and the section  
4 filter of the first extracting unit are set by the filter condition  
5 setting subunit, and

6 when the first extracting unit extracts a table, and the  
7 storing unit stores therein this table having an old table version  
8 number attached, the first extracting unit overwrites the table  
9 having the old table version number with the extracted table.

1 4. The digital broadcast receiving apparatus of Claim 1,  
2 wherein

3 the information table further includes a flag that  
4 indicates whether each of the tables is being multiplexed onto  
5 the transport stream or not, and

6 the controlling unit further includes

7 a deleting subunit operable to delete, from the  
8 storing unit and the information list, such a table that is  
9 indicated by the flag as not being multiplexed.

1 5. The digital broadcast receiving apparatus of Claim 4,  
2 wherein

3 the information table further includes a validity period  
4 of each of the tables, and

5       the controlling unit further includes:

6               a schedule generating subunit operable to generate  
7   a schedule for extracting a table at a beginning of its validity  
8   period and for deleting a table at an end of its validity period;  
9   and

10       the filter condition setting subunit and the deletion  
11   subunit operate according to the schedule.

1   6.       A digital broadcast apparatus comprising:

2       a first multiplexing unit operable to multiplex video  
3   data and/or audio data onto a transport stream;

4       a second multiplexing unit operable to repeatedly  
5   multiplex tables on the transport stream in a section format,  
6   the tables each including information used for extraction and  
7   output of video data and/or audio data performed by a receiving  
8   apparatus and being identified by a packet identifier and a table  
9   identifier;

10       a third multiplexing unit operable to repeatedly  
11   multiplex, onto the transport stream, an information table that  
12   includes (i) a piece of table ID information and a table version  
13   number of each of the tables and (ii) an information table version  
14   number of the information table, which is to be updated when  
15   any one of the tables is updated; and

16       a transmitting unit operable to transmit the transport

17 stream, on which the first, second, and third multiplexing units  
18 have performed the multiplexing, to the receiving apparatus.

1 7. A digital broadcast receiving method for receiving a  
2 transport stream onto which video data and/or audio data are  
3 multiplexed and outputting video data and/or audio data,  
4 comprising:

5 a first extracting step of, with use of a packet filter  
6 and a section filter, extracting one or more of tables, each  
7 of which (i) is repeatedly multiplexed onto the transport stream,  
8 (ii) is contained in a transport stream packet in a section format,  
9 (iii) is identified with a packet identifier and a table  
10 identifier, and (iv) includes information for extracting and  
11 outputting the video data and/or the audio data;

12 a recording step of recording the extracted tables in  
13 a storage area;

14 a second extracting step of extracting an information  
15 table that is repeatedly multiplexed onto the transport stream  
16 and includes (i) a piece of table ID information and a table  
17 version number of each of the tables and (ii) an information  
18 table version number of the information table, which is to be  
19 updated when there is a change in any one of the pieces of table  
20 ID information and the table version numbers, the extraction  
21 being performed when the information table version number has

22 been updated; and  
23 a controlling step of analyzing the extracted information  
24 table, having the first extracting step extract, based on table  
25 ID information, such a table whose table version number has been  
26 updated, and having what has been recorded in the recording step  
27 updated, wherein  
28 the controlling step includes:  
29 an information list generating substep of  
30 generating an information list that includes such information  
31 of the tables recorded in the recording step that corresponds  
32 to the information table;  
33 a comparing substep of comparing table version  
34 numbers written in the information list with the table version  
35 numbers in the information table extracted in the second  
36 extracting step; and  
37 a filter condition setting step of setting a packet  
38 identifier and a table identifier of such a table whose table  
39 version number written in the information table is found updated  
40 by the comparing substep, as a packet filter and a section filter,  
41 respectively.

1 8. A digital broadcast method comprising:  
2 a first multiplexing step of multiplexing video data  
3 and/or audio data onto a transport stream;

4           a second multiplexing step of repeatedly multiplexing  
5 tables on the transport stream in a section format, the tables  
6 each including information used for extraction and output of  
7 video data and/or audio data performed by a receiving apparatus  
8 and being identified by a packet identifier and a table  
9 identifier;

10          a third multiplexing step of repeatedly multiplexing,  
11 onto the transport stream, an information table that includes  
12 (i) a piece of table ID information and a table version number  
13 of each of the tables and (ii) an information table version number  
14 of the information table, which is to be updated when any one  
15 of the tables is updated; and

16          a transmitting step of transmitting the transport stream,  
17 on which the first, second, and third multiplexing steps have  
18 performed the multiplexing, to the receiving apparatus.

1   9.       A digital broadcast receiving program to be applied to  
2 a digital broadcast receiving apparatus that receives a transport  
3 stream onto which video data and/or audio data are multiplexed  
4 and outputs video data and/or audio data, comprising:

5          a first extracting step of, with use of a packet filter  
6 and a section filter, extracting one or more of tables, each  
7 of which (i) is repeatedly multiplexed onto the transport stream,  
8 (ii) is contained in a transport stream packet in a section format,

9 (iii) is identified with a packet identifier and a table  
10 identifier, and (iv) includes information for extracting and  
11 outputting the video data and/or the audio data;

12 a recording step of recording the extracted tables in  
13 a storage area;

14 a second extracting step of extracting an information  
15 table that is repeatedly multiplexed onto the transport stream  
16 and includes (i) a piece of table ID information and a table  
17 version number of each of the tables and (ii) an information  
18 table version number of the information table, which is to be  
19 updated when there is a change in any one of the pieces of table  
20 ID information and the table version numbers, the extraction  
21 being performed when the information table version number has  
22 been updated; and

23 a controlling step of analyzing the extracted information  
24 table, having the first extracting step extract, based on table  
25 ID information, such a table whose table version number has been  
26 updated, and having what has been recorded in the recording step  
27 updated, wherein

28 the controlling step includes:

29 an information list generating substep of  
30 generating an information list that includes such information  
31 of the tables recorded in the recording step that corresponds  
32 to the information table;



33           a comparing substep of comparing table version  
34 numbers written in the information list with the table version  
35 numbers in the information table extracted in the second  
36 extracting step; and

37           a filter condition setting step of setting a packet  
38 identifier and a table identifier of such a table whose table  
39 version number written in the information table is found updated  
40 by the comparing substep, as a packet filter and a section filter,  
41 respectively.